

In the Claims:

1 1. (Original) A surface-coated cutting tool comprising a
2 coating film on a base, wherein

3 said coating film comprises a hard layer constituted
4 of a compound selected from a nitride, a carbonitride, an
5 oxynitride and a carboxynitride of at least one primary
6 element selected from a group consisting of the metals
7 belonging to the groups 4a, 5a and 6a of the periodic table
8 as well as B, Al and Si, and

9 said hard layer satisfies the following:

10 (a) $(h_{\max} - h_f)/h_{\max}$ is at least 0.2 and not more
11 than 0.7, assuming that h_{\max} represents the
12 maximum indentation depth and h_f represents the
13 indentation depth (dent depth) after unloading,
14 in a hardness test according to nanoindentation,

15 (b) the thickness of the hard layer is at least 0.5 μm
16 and not more than 15 μm , and

17 (c) the hardness according to nanoindentation is at
18 least 20 GPa and not more than 80 GPa.

1 2. (Currently amended) The surface-coated cutting tool
2 according to claim 1, wherein

3 the hard layer is composed of a compound selected from
4 a nitride, a carbonitride, an oxynitride and a
5 carboxynitride of Ti, Al and [[S-]] Si.

1 3. (Currently amended) The surface-coated cutting tool
2 according to claim 1, wherein

3 the hard layer is composed of a compound selected from
4 a nitride, a carbonitride, an oxynitride and a
5 carboxynitride of $(\text{Ti}_{1-x-y}\text{Al}_x\text{Si}_y)$ ($0 \leq x \leq 0.7$, $0 \leq y \leq 0.2$).

1 4. (Currently amended) The surface-coated cutting tool
2 according to claim 1, wherein

3 the primary element contains at least one addition
4 element selected from a group consisting of ~~[[B₇]]~~ Mg, Ca,
5 V, ~~[[Cr₇]]~~ Zn and Zr, and

6 the primary element contains less than 10 atomic % of
7 said addition element.

1 5. (Currently amended) The surface-coated cutting tool
2 according to claim 1, wherein

3 the hard layer is composed of a compound selected from
4 a nitride, a carbonitride, an oxynitride and a
5 carboxynitride of $(\text{Al}_{1-a-b-c}\text{Cr}_a\text{V}_b\text{Si}_c)$ ($0 \leq a \leq 0.4$,
6 ~~[[0 ≤ b ≤ 0.4,]]~~ $0 < b \leq 0.4$, $0 \leq c \leq 0.2$, $a + b \neq 0$,
7 $0 < a + b + c < 1$).

1 6. (Original) The surface-coated cutting tool according to
2 claim 1, wherein

3 the coating film further comprises an intermediate
4 layer formed between the base surface and the hard layer,
5 and

6 said intermediate layer is constituted of any of a
7 nitride of Ti, a nitride of Cr, Ti and Cr.

1 7. (Original) The surface-coated cutting tool according to
2 claim 6, wherein

3 the thickness of the intermediate layer is at least
4 0.005 μm and not more than 0.5 μm .

1 8. (Currently amended) The surface-coated cutting tool
2 according to claim 1, wherein

3 the base is constituted of any of ~~WC-based~~ cemented
4 carbide comprising WC, cermet, high-speed steel, ceramics,
5 a cubic boron nitride sintered body, a diamond sintered
6 body, a silicon nitride sintered body and a sintered body
7 containing aluminum oxide and titanium carbide.

1 9. (Original) The surface-coated cutting tool according to
2 claim 1, wherein

3 the surface-coated cutting tool is any of a drill, an
4 end mill, a cutting edge-replaceable insert for milling, a
5 cutting edge-replaceable insert for turning, a metal saw,
6 a gear cutting tool, a reamer and a tap.

1 10. (Original) The surface-coated cutting tool according to
2 claim 1, wherein

3 the coating film is applied by physical vapor
4 deposition.

1 11. (Original) The surface-coated cutting tool according to
2 claim 10, wherein
3 the physical vapor deposition is arc ion plating or
4 magnetron sputtering.

1 12. (New) The surface-coated cutting tool according to claim 1,
2 wherein said hard layer is made up of crystal grains having
3 an average particle diameter in a range from 2nm to 100nm.

1 13. (New) The surface-coated cutting tool according to claim 1,
2 wherein said hardness is at least 55 GPa.

1 14. (New) The surface-coated cutting tool according to claim 1,
2 wherein said $(h_{\max} - h_f)/h_{\max}$ is less than 0.28.

1 15. (New) The surface-coated cutting tool according to claim 1,
2 wherein said $(h_{\max} - h_f)/h_{\max}$ is at least 0.43.

1 16. (New) The surface-coated cutting tool according to claim 1,
2 wherein said $(h_{\max} - h_f)/h_{\max}$ is at least 0.48.

1 17. (New) The surface-coated cutting tool according to claim 1,
2 wherein said $(h_{\max} - h_f)/h_{\max}$ is at least 0.54.

1 18. (New) The surface-coated cutting tool according to claim 1,
2 having such characteristics as result from fabricating said
3 surface-coated cutting tool by mounting said base on a base
4 holder, performing a film forming process in a chamber to

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5 deposit said hard layer on said base, stopping said film
6 forming process and filling helium gas into said chamber,
7 and quenching by water-cooling said base holder.

[RESPONSE CONTINUES ON NEXT PAGE]

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